

## **BARRIER SHEET AND METHOD OF MAKING SAME**

### **Abstract**

Material with high oxygen barrier properties is prepared by evaporating polyfunctional  
5 acrylate monomer and condensing the acrylate as a monomer film on a plastic sheet, or by roll  
coating acrylate monomer onto a sheet in a vacuum. The acrylate is polymerized by  
irradiation by ultraviolet or electron beam. A layer of metal or oxide oxygen barrier material  
is applied over the first layer of cross-linked acrylate. A polymerized acrylate layer is applied  
over the metal layer. Low oxygen permeability polypropylene, polyester or nylon sheets can  
10 be made by these methods. Adhesion of the acrylate layer on the plastic sheet substrate is  
enhanced by reactive plasma treatment of a surface immediately before deposition, the plasma  
treatment and coating being conducted in vacuum within less than three seconds between  
plasma treatment and coating. Condensation efficiency is also enhanced by chilling the  
substrate of the substrate on which the acrylate is condensed to temperatures below 0°C. A  
15 backup drum in the apparatus may be cooled to less than -15°C.